

CLAIMS:

1. A vehicle security device connected to a vehicle apparatus for communicating with a portable device, the security device being characterized by:

a first communication means for performing a first coded communication to establish a first mutual authentication with the portable device;

an ID code management means connected to the first communication means, having a first code and a second code, and being incommunicable with the portable device, the ID code management means performing a second coded communication for establishing a second mutual authentication with the first communication means using the first code; and

a second communication means for performing a third coded communication to establish mutual authentication with the ID code management means using the second code, the second communication means enabling the operation of the vehicle apparatus when every one of the first, second, and third mutual authentications have been established.

2. The vehicle security device according to claim 1 characterized in that the second communication means enables the vehicle to be driven when all of the first, second, and third mutual authentications are established.

3. The vehicle security device according to claim 1 or 2, characterized in that the first communication means includes a volatile storage means for storing the first code.

4. The vehicle security device according to any one

of claims 1 to 3, characterized in that the second communication means includes a nonvolatile storage means for storing the first code and the second code.

5           5.    The vehicle security device according to any one of claims 1 to 4, characterized in that the first communication means generates a first code using a calculation formula, unique to the first communication device, and a third code.

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6.    The vehicle security device according to any one of claims 1 to 5, characterized in that:

the vehicle apparatus includes an engine; and

15           the second communication means enables the engine to be started when all of the first, second, and third mutual authentications have been established.

7.    The vehicle security device according to any one of claims 1 to 6, characterized in that:

20           the first communication means includes a volatile storage means for storing a signal; and

the second communication means and the ID code management means sends and receives the signal via the storage means.

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8.    The vehicle security device according to any one of claims 1 to 7, characterized in that the first communication means includes an electronic control unit used for smart ignition.

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9.    The vehicle security device according to any one of claims 1 to 8, wherein the second communication means includes an electronic control unit used for engine control.

10. A vehicle security device connected to a vehicle apparatus for communicating with a portable device having a portable device code, the security device being

5 characterized by:

a first electronic control unit, having a vehicle code and a first code, for receiving the portable device code from the portable device;

10 an ID code box, connected to the first electronic control unit and having a first code and a second code, for exchanging the first codes with the first electronic control unit; and

a second electronic control unit, having a second code, for exchanging the second codes with the ID code box, the  
15 second electronic control unit enabling the vehicle apparatus to operate when the portable device code matches the vehicle code, the first code of the first electronic control unit matches the first code of the ID code box, and the second code of the ID code box matches the second code  
20 of the second electronic control unit.

11. An ID code management device for use in a vehicle security device connected to a vehicle apparatus, the vehicle security device being characterized by:

25 a first communication means for performing a first coded communication to establish a first mutual authentication with the portable device, and a second communication means for disabling operation of the vehicle apparatus when the first mutual authentication is not  
30 established;

the ID code management device managing a first code and a second code without communicating with the portable device, performing a second coded communication using the

first code to establish a second mutual authentication with the first communication means, and performing a third coded communication using the second code to establish a third mutual authentication with the second communication means;

5 and

the vehicle security device disables the operation of the vehicle apparatus when the third mutual authentication is not established.